

Understanding the Adaptive Functions of Morality from a Cognitive Psychological Perspective

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Abstract

What are the possible functions of moral cognition? Addressing this question has proved difficult, leading to disagreement among moral psychologists. Researchers claiming that morality is composed of many distinct domains have posited multiple functions, whereas researchers focusing on the features that are unique to and common across all moral judgments have suggested a unified evolutionary function. In this review, we suggest that the limitations of these accounts can be overcome by systematically investigating the cognitive mechanisms that support moral judgments across descriptively distinct domains. As a case study, we focus on the contrast between harm and purity morals, and we argue for a novel functional difference on the basis of differences in the underlying psychological processes. Understanding the psychology behind distinct morals will pave the way for understanding the distinct functions of moral cognition.

INTRODUCTION

Is it not reasonable to anticipate that our understanding of the human mind would be greatly aided by knowing the purpose for which it was designed?

George C. Williams (1966, p. 16)

What is the purpose of moral cognition? Moral psychologists have become increasingly interested in exploring the function of moral cognition (i.e., how we think about moral right and wrong) using the tools of evolutionary and developmental psychology. Given the complexity of moral cognition, this has proved to be a difficult task. On the one hand, “morality” could mean many things at once—an umbrella term referring to diverse judgments of diverse behaviors, from assault to incest. Accordingly, researchers supporting this view have posited multiple distinct functions for distinct “domains”

of morality. On the other hand, morality may be unified and defined by features that are unique to morality (vs other domains of cognition) or at least features that are common across descriptively different kinds of moral norms. Researchers proposing such a unified account of morality also typically propose a unified adaptive function for morality.

In this review, we discuss the strengths and limitations of these two accounts. We then highlight new research on the cognitive mechanisms supporting moral judgment and how this research constrains and informs inferences about the adaptive functions of morality. Using the contrast between harm and purity morals as a case study, we illustrate how understanding the cognitive mechanisms for moral judgments allows researchers to build novel functional accounts that capture real psychological differences.

FOUNDATIONAL RESEARCH

MORALITY IS MANY THINGS

Historically, morality has been thought to be a unified ethic of justice and fairness (Kohlberg, 1969, 1981; cf. Baumard, Andre, & Sperber, in press) or a related ethic of concern for people's welfare and happiness (Harris, 2010). However, views of morality as a single ethic or value have attracted many critics. These critics have argued that our moral concerns are many—providing care and prohibiting harm (Gilligan, 1982), showing respect and loyalty (Shweder, Much, Mahapatra, & Park, 1997), preserving one's purity (Appiah, 2006; Haidt & Joseph, 2007), to name a few. In order to account for these diverse descriptions of common moral concerns, Moral Foundations Theory (MFT) has posited that morality is composed of five distinct moral domains (Harm, Fairness, Loyalty, Authority, and Purity), each of which evolved in response to a specific adaptive need (Graham *et al.*, 2011, 2013; Graham, Haidt, & Nosek, 2009). On this view, each moral domain is a functionally specialized mechanism, or module (Graham *et al.*, 2013; Haidt & Joseph, 2007). For example, the Harm domain addresses the challenge of caring for vulnerable offspring, the Authority domain helps people navigate social dominance hierarchies, and the Purity domain prevents exposure to pathogens and parasites.

While MFT has broadened the scope of research in moral psychology and uncovered meaningful differences in the moral concerns endorsed within and across cultures (e.g., liberals/conservatives; Graham *et al.*, 2009), MFT may be limited in its empirical focus on the descriptive content of moral norms. The ways in which moral content can be carved up into different categories are numerous and possibly arbitrary. Indeed, MFT originally featured four domains, such that loyalty was covered by a combination

of reciprocity and hierarchy (Haidt & Joseph, 2004). MFT in its present form accommodates five domains, featuring loyalty as its own distinct domain (Graham *et al.*, 2011; Haidt, & Joseph, 2007). More recently, theorists have tentatively proposed six domains, splitting Fairness into two separate domains: Equality and Liberty/Oppression (Graham *et al.*, 2013). Given the sheer breadth of possible moral concerns, the number of domains could be ratcheted up to include domains concerning industriousness, modesty, and wastefulness (Graham *et al.*, 2013; Suhler & Churchland, 2011). The number of moral domains that researchers could potentially identify seems limitless: Morality may, in fact, be composed of hundreds or even thousands of distinct functional modules, each addressing a unique adaptive problem (Cosmides & Tooby, 1994).

The concern here is not one of parsimony—an acceptable taxonomy of morality should strive for explanatory adequacy without limiting itself for the sake of neatness. Instead, the concern is with the general approach of carving up moral cognition based on descriptive differences, that is, differences in the content of moral actions, rather than differences in the psychological mechanisms that support the processing of different actions. This concern deserves more consideration as more domains are identified. Notably, the addition of Liberty as a sixth domain was motivated by the observation of moral attitudes among Libertarians that were not easily described by the current moral domains (Iyer, Koleva, Graham, Ditto, & Haidt, 2012), rather than by novel evolutionary theorizing or novel observations of cognitive mechanism. If moral domains represent functionally distinct modules, then judgments associated with distinct domains might be expected to behave differently—they might follow different cognitive rules because of the contribution of different cognitive processes. To the extent that evidence for such differences is lacking among the five domains posited by MFT (see section titled “Key Issues for Future Research”), amendments to current moral taxonomies may be needed.

MORALITY IS ONE THING

Despite its diverse content, morality may nonetheless be unified by features that are unique to moral judgments and also common to moral judgments across all domains (Young & Dungan, 2012). Developmental psychologists made an early attempt at distinguishing moral norms from norms of social convention (Turiel, 1983). Work on the moral–conventional distinction was aimed at identifying the features that separate conventional judgments (e.g., wearing pajamas to class is wrong) from uniquely moral judgments (e.g., murder is wrong). For instance, while conventional judgments are culture-specific, moral judgments might apply universally across all cultures

as well as across time (e.g., murder is always wrong, no matter the place or time).

While the moral–conventional distinction has faced criticism (Kelly, Stich, Haley, Eng, & Fessler, 2007), researchers have proposed other features that may be common across, and unique to, moral judgments. Moral violations evoke stronger emotional and behavioral reactions than conventional violations. For example, when previously nonmoral norms become moralized (as in the case of an omnivore who converts to vegetarianism for moral reasons), these newly moralized norms elicit a common suite of reactions such as prohibition, internalization, overjustification, and increased parent-to-child transmission (Rozin, 1997, 1999).

More importantly, while descriptive theories of diverse moral domains offer few specific predictions about the psychological mechanisms underlying distinct domains, researchers focusing on morality as a unified concept suggest common cognitive components that cut across all moral judgments—in spite of their apparent differences. On one such account, “moral cognition has an ‘insert here’ parameter, processing diverse moral rules with the same computational architecture” (DeScioli & Kurzban, 2009, p. 3). Researchers have proposed a number of candidate components of uniquely moral cognition, such as the perception of an agent who inflicts harm on a patient (Gray, Young, & Waytz, 2012), or the integration of causal and intentional attributions (Mikhail, 2007).

If cognitive mechanisms operate similarly across descriptively different moral domains, and if these domains share a common cognitive structure that is distinct from nonmoral judgments, then morality may be better understood as serving a single purpose. One possibility is that morality functions to limit selfishness and foster cooperation (Tomasello & Vaish, 2013). Similarly, morality could function as a means of navigating social alliances (Atran & Henrich, 2010; Graham *et al.*, 2009; Sosis & Bressler, 2003). In competitive terms, morality could function as a dynamic coordination strategy for choosing sides in interpersonal and intergroup conflict (DeScioli & Kurzban, 2009, 2013). In all cases, the functional explanations are not tied down to the specific content of moral actions and instead focus on a broader adaptive problem that might be unique to morality and common across all kinds of moral judgments.

The strength of these unified accounts is their attention to the psychological mechanisms supporting moral judgment. However, unified accounts run the risk of overgeneralization (Parkinson *et al.*, 2011). By focusing on common features across moral domains, researchers may fail to detect meaningful differences in the psychological mechanisms underlying different moral judgments.

A NEW APPROACH FOR DEFINING MORALITY

We have reviewed the strengths and limitations of current taxonomies of morality. How then should moral psychologists approach the task of carving up (or not carving up) moral cognition? We suggest that moral psychologists might first identify cognitive rules that apply to moral judgment in one context and then test whether those rules apply equivalently across descriptively distinct domains. In the next section, we use the well-studied domains of harm and purity to illustrate how the cognitive processes underlying different norms dictate where psychologically meaningful boundaries exist within moral cognition.

CUTTING-EDGE RESEARCH

THE CASE OF HARM AND PURITY

Descriptive accounts of morality provide clear evidence that people moralize not simply concerns of harm (e.g., murder is wrong) but also concerns of purity—for example, avoiding impure objects or acts that could lead to defilement or contamination (Shweder *et al.*, 1997). Purity morals are typically characterized as part of an adaptive disease-avoidance mechanism that has been co-opted to signal socially and morally offense behavior as well (e.g., drug abuse, sexual deviance; Chapman, Kim, Susskind, & Anderson, 2009). Purity norms may thus function to protect the body from desecration or defilement. By contrast, moral norms against harm are thought to address the evolutionary need to care for vulnerable offspring, leading us to express compassion and empathy for the suffering (Haidt & Joseph, 2007).

While this functional distinction may be intuitively appealing, empirical evidence for distinct psychological signatures of harm and purity morals has been mixed. On the one hand, researchers supporting the view that “morality is many things” suggest that harm and purity are associated with distinct emotions: typically, harm violations elicit anger, whereas purity violations elicit disgust (Rozin, Lowery, Imada, & Haidt, 1999; Russell & Giner-Sorolla, 2013). However, researchers supporting the view that “morality is one thing” point out that feelings of anger and disgust are highly correlated and frequently co-occur (Gray *et al.*, 2012). Furthermore, observations of whether specific emotions are linked to specific moral judgments have been variable across studies. Disgust, for instance, has been shown to increase the severity of purity-related judgments specifically (Seidel & Prinz, 2013), moral judgment more generally (Zhong & Liljenquist, 2006), and even judgments of nonmoral actions (e.g., giving a class presentation; Wheatley & Haidt, 2005).

Some researchers have argued that purity violations do not belong to a separate domain; instead, they can be construed as a form of harm

(Gray *et al.*, 2012). If harm and purity morals do not form distinct domains, then we might expect similar psychological processing underlying harm and purity morals. Yet, new studies reveal important differences. For example, while anger, elicited by harmful actions, is modulated by contextual factors, including whether the violation was committed intentionally or accidentally, disgust, elicited by purity violations, is insensitive to factors such as intent—disgust is elicited simply if purity rules have been broken, regardless of the circumstances (Russell & Giner-Sorolla, 2010, 2011). Furthermore, participants perceive a greater moral difference between intentional and accidental harms, compared to the difference between intentional and accidental purity violations (Young & Saxe, 2011).

The behavioral difference in people's moral judgments of harm and purity violations is supported by recent neural evidence. Brain regions involved in reasoning about mental states (e.g., beliefs, intentions) are more active when participants judge harmful compared to impure actions (Young, Chakroff, Dungan, Koster-Hale, & Saxe, in prep.). In addition, information about intent is encoded in the spatial pattern of neural activity in brain regions for mental state reasoning when participants consider harm violations but not purity violations. The evidence thus reveals important differences in the cognitive mechanisms for harm and purity judgments.

DISTINCT FUNCTIONS FOR SELF VERSUS OTHER

How can the pattern of cognitive differences observed inform our functional accounts of harm versus purity norms? One explanation is that harm norms function to limit our negative impact on others. Harm norms appear to operate primarily in interpersonal contexts, where one person's harmful actions affect another. Recent work suggests that the presence of at least two parties—a violator who acts on a victim—is necessary to establish an act as harmful in the first place (DeScioli & Kurzban, 2009; Gray & Wegner, 2011). If harm norms dictate how we ought (and ought not) to treat each other, information about intent would be expected to play a significant role: We need to know what others are thinking of to evaluate their actions and to understand their intentions toward us.

Conversely, purity norms may function to limit our negative impact on ourselves. We may pay particular attention to preserving the purity of our own bodies (Russell & Giner-Sorolla, 2013). Indeed, we may be concerned with the impurities of other people only to the extent that they are perceived as a possible threat to our own purity (Rozin, Haidt, & McCauley, 2000). Impure actions are therefore prohibited even when no one, except for possibly one's own self, is rendered a "victim" (Haidt, Koller, & Dias, 1993). If purity norms function to protect our own selves from possible contamination, we may care

less about our own intent, that is, whether we acted accidentally or intentionally in defiling ourselves. As Appiah (2006) states in an account of Akran society in Ghana: "With taboo breaking ... it doesn't matter what you meant to do. You're polluted. You need to get clean" (p. 51). In other words, because purity violations affect the self, we care mostly about avoiding the outcome or else making sure we "get clean" afterwards.

Thus, our key prediction is that purity norms function to protect one's self, whereas harm norms function to protect others. Two recent lines of investigation in our laboratory support this prediction. First, regardless of whether the content of actions was harmful or impure, participants judged self-directed actions (e.g., cutting or splashing urine on yourself) as impure and other-directed actions (e.g., cutting or splashing urine on someone else) as harmful. Importantly, the perceived moral difference between intentional versus accidental violations was also smaller for self-directed actions, compared to other-directed actions, consistent with the differential role of intent across moral domains (Chakroff, Dungan, & Young, 2013).

Second, although moral judgments of negative actions directed at others versus one's self show the cognitive signatures of moral judgments of harm versus purity violations, respectively, an outstanding question is whether participants are especially averse to impure outcomes that affect themselves and harmful outcomes that affect others. Consistent with this prediction, participants judged harmful actions as morally worse (and less preferred) than impure actions when directed at others; however, the opposite pattern emerged when participants judged actions directed at themselves—impure actions were judged as morally worse (and less preferred; Dungan, Chakroff, & Young, submitted). Thus, purity norms are tied specifically to concerns about defiling one's self, whereas harm norms are tied to concerns about harming others.

BEYOND SELF VERSUS OTHER

A potential limitation of the proposed functional distinction between norms governing how we treat ourselves and norms governing how we treat others is that we have focused only on judgments of interactions between individuals when much of morality occurs at the level of groups. Purity morals may not only govern how people treat their own bodies but also more generally define proper behavior within a group, as well as boundaries between groups (cf. Atran & Henrich, 2010; Sosis & Bressler, 2003). As such, close adherence to purity norms may be a strong signal of group membership. We argue, however, that purity morals operating at the group level may nonetheless function to protect the self for two reasons: (i) purity violations undermine the cohesion of the social group, making each individual potentially

vulnerable to threat, and (ii) purity violations committed by other group members may contaminate one's self either by association with the group, or directly through physical contagion (cf. van Leeuwen, Park, Koenig, & Graham, 2012).

A unique prediction follows from this account. While studies in social psychology routinely demonstrate a robust in-group bias whereby people judge their own group's violations as less wrong than the same violations committed by an out-group member (Valdesolo & DeSteno, 2007), this account predicts that people should be harsher on purity violations occurring within versus outside of their own group—again, because of the potential threat of impurity for the self. To test this prediction, we presented participants with vignettes (adapted from Leidner & Castano, 2012) depicting in-group and out-group members committing harm and purity violations (Dungan *et al.*, submitted). Consistent with our prediction, participants displayed the typical in-group bias for harm violations, judging out-group harm as worse than in-group harm; however, the opposite pattern emerged for purity violations—purity violations committed by in-group members were judged as morally worse than the same purity violations committed by out-group members. In an extension of our previous findings, these results suggest that some morals function for protecting the group and the self, whereas other morals may be focused more on how our actions affect others, across group boundaries.

KEY ISSUES FOR FUTURE RESEARCH

A NEW TAXONOMY FOR ALL MORAL JUDGMENT

While we have focused on the distinction between harm and purity, a primary question for future research is whether the functional distinction between morals that protect the self and morals that protect others applies to other moral norms described by MFT and other theories, including loyalty, hierarchy, and fairness. Although empirical work on the cognitive components of loyalty, hierarchy, and fairness judgments is sparse, several studies indicate a possible cognitive boundary between “individualizing” norms such as harm and fairness, and “binding norms” such as purity, loyalty, and hierarchy (Graham *et al.*, 2009). For example, while harmful omissions are generally judged less harshly than harmful commissions (e.g., it is worse to kill than to fail to rescue), this omission bias is reduced when the violator and victim are bound by a close relationship, necessitating loyalty, or a hierarchical relationship (e.g., the violator and victim are boss and employee; Haidt & Baron, 1996). Similarly, omission bias is enhanced for individualizing violations compared to purity violations

(DeScioli, Asao, & Kurzban, 2012; DeScioli, Christner, & Kurzban, 2011). These findings fit nicely with the given observations on the differential role of intent—revealing an overall emphasis on outcomes when considering binding norms compared to individualizing norms.

Other research on the cognitive and neural processes supporting different moral judgments corroborates the difference between individualizing and binding norms. Judgments of individualizing and binding norms are differentially affected by abstract versus concrete thinking (Napier & Luguri, 2013) as well as cognitive load (Wright & Baril, 2011). Endorsement of these norms is also associated with volumetric differences in specific brain regions (Lewis, Kanai, Bates, & Rees, 2012). Finally, while psychopathy is marked by a willingness to violate individualizing norms of harm and fairness, endorsement of binding norms is relatively preserved (Glenn, Iyer, Graham, Koleva, & Haidt, 2009). Notably, these findings do not reveal differences among all five domains of morality—suggesting that a two-factor model may better capture psychological differences in moral cognition (Dungan & Young, 2012; cf. the exploratory factor analysis in Graham *et al.*, 2011). These lines of research reveal empirical approaches for testing whether descriptively different moral domains are psychologically distinct and important avenues for building taxonomies of moral psychology.

MOTIVATION AND BEHAVIOR

As psychological and functional differences are uncovered within moral cognition, moral psychologists should also address the factors that influence judgments across domains. In a recent example, we described two people—one loyal person and one fair person—and asked participants which person they would rather befriend and which person they deemed more moral (Dungan, Waytz, & Young, in prep.). Overall, participants reported a preference for loyal (vs fair) friends but endorsed fairness (over loyalty) as an abstract moral virtue. Future research should investigate how different motivations, such as the need for social inclusion versus the need to feel moral (moral self-concept), influence judgments across moral domains.

Another key aim for moral psychologists will be to connect theories describing the adaptive functions of morality to actual behavior, both within and beyond the laboratory. For instance, if some moral norms function to protect the self, while other moral norms function to protect others, we might expect a tension between competing moral demands (cf. Cohen, Montoya, & Insko, 2006). This tension has behavioral implications, as in the case of whistleblowing. One hypothesis is that the valuation of fairness over loyalty predicts decisions to report unethical deeds; emphasizing one

value over another may consequently shift attitudes toward whistleblowing (Waytz, Dungan, & Young, submitted).

NORMATIVE IMPLICATIONS

Understanding moral norms from a cognitive psychological perspective may even, in some sense, constrain claims as to what morality is or ought to be. If moral norms ought to apply equally to everyone, regardless of culture or standing in society, then moral norms, such as purity, which govern self-interest or in-group interest, may be less legitimately moral than norms governing interpersonal interactions across group boundaries, such as harm (Bloom, 2011). Furthermore, if moral judgments of an agent should be based at least in part on the agent's mental states (e.g., whether the agent intended to do wrong or not), then our reactions to purity violations might be less legitimately moral, to the extent that they are largely insensitive to intent information and driven instead by the inflexible emotion of disgust, (Russell & Giner-Sorolla, 2013). Illuminating the cognitive mechanisms underlying different moral norms may indeed constrain key normative and meta-ethical claims.

CONCLUSION

Morality is complex. Researchers have disagreed over the function or functions of morality. Moving forward, moral psychologists would do well to focus their empirical efforts on the underlying cognitive processes for moral judgment to identify which descriptive differences are psychologically meaningful. Understanding these psychological differences will pave the way for understanding the key functions of moral cognition.

REFERENCES

- Appiah, K. A. (2006). In H. L. Gates (Ed.), *Cosmopolitanism: Ethics in a world of strangers*. New York, NY: W.W. Norton & Company Inc.
- Atran, S., & Henrich, J. (2010). The evolution of religion: How cognitive by-products, adaptive learning heuristics, ritual displays, and group competition generate deep commitments to prosocial religions. *Biological Theory*, 5(1), 18–30.
- Baumard, N., André, J. B., & Sperber, D. (in press). A mutualistic approach to morality. *Behavioral and Brain Sciences*.
- Bloom, P. (2011). Family, community, trolley problems, and the crisis in moral psychology. *Yale Review*, 99(2), 26–43.
- Chakroff, A., Dungan, J., & Young, L. (2013). Harming ourselves and defiling others: What determines a moral domain? *PLOS ONE*, 8(9), e74434. doi:10.1371/journal.pone.0074434

- Chapman, H. A., Kim, D. A., Susskind, J. M., & Anderson, A. K. (2009). In bad taste: Evidence for the oral origins of moral disgust. *Science*, 323(5918), 1222–1226.
- Cohen, T. R., Montoya, R. M., & Insko, C. A. (2006). Group morality and intergroup relations: Cross-cultural and experimental evidence. *Personality & Social Psychology Bulletin*, 32(11), 1559–1572. doi:10.1177/0146167206291673
- Cosmides, L., & Tooby, J. (1994). Origins of domain specificity: The evolution of functional organization. In L. A. Hirschfeld & S. A. Gelman (Eds.), *Mapping the mind: Domain-specificity in cognition and culture* (pp. 85–116). Cambridge, England: Cambridge University Press.
- DeScioli, P., Asao, K., & Kurzban, R. (2012). Omissions and byproducts across moral domains. *PLoS ONE*, 7(10), e46963. doi:10.1371/journal.pone.0046963
- DeScioli, P., Christner, J., & Kurzban, R. (2011). The omission strategy. *Psychological Science*, 22(4), 442–446. doi:10.1177/0956797611400616
- DeScioli, P., & Kurzban, R. (2009). Mysteries of morality. *Cognition*, 112(2), 281–299. doi:10.1016/j.cognition.2009.05.008
- DeScioli, P., & Kurzban, R. (2013). A solution to the mysteries of morality. *Psychological Bulletin*, 139(2), 477–496. doi:10.1037/a0029065
- Dungan, J., Chakroff, A., & Young, L. (submitted). Purity versus pain: Distinct moral concerns for self versus other.
- Dungan, J., Waytz, A., & Young, L. (in prep). Distinct motivations drive prioritization of loyalty versus fairness.
- Dungan, J., & Young, L. (2012). *Moral Psychology. A Companion to moral anthropology*, D. Fassin, John Wiley & Sons, Ltd, Chichester, UK. doi:10.1002/9781118290620.ch32
- Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Glenn, A. L., Iyer, R., Graham, J., Koleva, S., & Haidt, J. (2009). Are all types of morality compromised in psychopathy? *Journal of Personality Disorders*, 23(4), 384–398. doi:10.1521/pedi.2009.23.4.384
- Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. *Advances in Experimental Social Psychology*, 47, 55–130.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96(5), 1029–1046. doi:10.1037/a0015141
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, 101(2), 366–385. doi:10.1037/a0021847
- Gray, K., & Wegner, D. M. (2011). Dimensions of moral emotions. *Emotion Review*, 3(3), 258–260. doi:10.1177/1754073911402388
- Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of morality. *Psychological Inquiry*, 23(2), 101–124. doi:10.1080/1047840X.2012.651387
- Haidt, J., & Baron, J. (1996). Social roles and the moral judgement of acts and omissions. *European Journal of Social Psychology*, 26(March 1994), 201–218.

- Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus*, 133(4), 55–66.
- Haidt, J., & Joseph, C. (2008). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. *The innate mind*, 3, 367–391.
- Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, 65(4), 613–628 Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=8229648.
- Harris, S. (2010). *The moral landscape: How science can determine human values*. New York, NY: Free Press.
- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PLoS ONE*, 7(8), e42366. doi:10.1371/journal.pone.0042366
- Kelly, D., Stich, S., Haley, K. J., Eng, S. J., & Fessler, D. M. T. (2007). Harm, affect, and the moral/conventional distinction. *Mind & Language*, 22(2), 117–131. doi:10.1111/j.1468-0017.2007.00302.x
- Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 151–235). New York, NY: Academic Press.
- Kohlberg, L. (1981). *Essays on moral development, volume 1: The philosophy of moral development*. New York, NY: Harper Row.
- van Leeuwen, F., Park, J. H., Koenig, B. L., & Graham, J. (2012). Regional variation in pathogen prevalence predicts endorsement of group-focused moral concerns. *Evolution and Human Behavior*, 33(5), 429–437.
- Leidner, B., & Castano, E. (2012). Morality shifting in the context of intergroup violence. *European Journal of Social Psychology*, 42(1), 82–91. doi:10.1002/ejsp.846
- Lewis, G. J., Kanai, R., Bates, T. C., & Rees, G. (2012). Moral values are associated with individual differences in regional brain volume. *Journal of Cognitive Neuroscience*, 24(8), 1657–1663. doi:10.1162/jocn_a_00239
- Mikhail, J. M. (2007). Universal moral grammar: Theory, evidence and the future. *Trends in Cognitive Sciences*, 11(4), 143–152.
- Napier, J. L., & Luguri, J. B. (2013). Moral mind-sets: Abstract thinking increases a preference for “individualizing” over “binding” moral foundations. *Social Psychological and Personality Science*. doi:10.1177/1948550612473783
- Parkinson, C., Sinnott-Armstrong, W., Koralus, P. E., Mendelovici, A., McGeer, V., & Wheatley, T. (2011). Is morality unified? Evidence that distinct neural systems underlie moral judgments of harm, dishonesty, and disgust. *Journal of Cognitive Neuroscience*, 23(10), 3162–3180. doi:10.1162/jocn_a_00017
- Rozin, P. (1997). Moralization. In A. Brandt & P. Rozin (Eds.), *Morality and Health* (pp. 379–401). New York, NY: Routledge.
- Rozin, P. (1999). The process of moralization. *Psychological Science*, 10(3), 218–221. doi:10.1111/1467-9280.00139
- Rozin, P., Haidt, J., & McCauley, C. (2000). Disgust. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (2nd ed., pp. 637–653). New York, NY: Guilford.

- Rozin, P., Lowery, L., Imada, S., & Haidt, J. (1999). The CAD triad hypothesis: A mapping between three moral emotions (contempt, anger, disgust) and three moral codes (community, autonomy, divinity). *Journal of Personality and Social Psychology*, 76(4), 574–586. Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=10234846.
- Russell, P. S., & Giner-Sorolla, R. (2010). Moral anger is more flexible than moral disgust. *Social Psychological and Personality Science*, 2(4), 360–364. doi:10.1177/1948550610391678
- Russell, P. S., & Giner-Sorolla, R. (2011). Moral anger, but not moral disgust, responds to intentionality. *Emotion (Washington, D.C.)*, 11(2), 233–240. doi:10.1037/a0022598
- Russell, P. S., & Giner-Sorolla, R. (2013). Bodily moral disgust: What it is, how it is different from anger, and why it is an unreasoned emotion. *Psychological Bulletin*, 139(2), 328–351. doi:10.1037/a0029319
- Seidel, A., & Prinz, J. (2013). Sound morality: Irritating and icky noises amplify judgments in divergent moral domains. *Cognition*, 127(1), 1–5. doi:10.1016/j.cognition.2012.11.004
- Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “big three” of morality (autonomy, community, and divinity), and the “big three” explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119–169). New York, NY: Routledge.
- Sosis, R., & Bressler, E. (2003). Cooperation and commune longevity: A test of the costly signaling theory of religion. *Cross-Cultural Research*, 37, 211–239.
- Suhler, C. L., & Churchland, P. (2011). Can innate, modular “foundations” explain morality? Challenges for Haidt’s Moral Foundations Theory. *Journal of Cognitive Neuroscience*, 23(9), 2103–2116; discussion 2117–22. doi:10.1162/jocn.2011.21637
- Tomasello, M., & Vaish, A. (2013). Origins of human cooperation and morality. *Annual Review of Psychology*, 64, 231–255. doi:10.1146/annurev-psych-113011-143812
- Turiel, E. (1983). *The development of social knowledge: Morality and convention*. Cambridge, MA: Cambridge University Press.
- Valdesolo, P., & DeSteno, D. (2007). Moral hypocrisy social groups and the flexibility of virtue. *Psychological Science*, 18(8), 689–690.
- Waytz, A., Dungan, J., & Young, L. (2013). The Whistleblower’s Dilemma and the Fairness-Loyalty Tradeoff. *Journal of Experimental Social Psychology*, 49, 1027–1033. doi:10.1016/j.jesp.2013.07.002
- Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science*, 16(10), 780–784.
- Williams, G. C. (1966). *Adaptation and natural selection: A critique of some current evolutionary thought*. Princeton, NJ: Princeton University Press.
- Wright, J., & Baril, G. (2011). The role of cognitive resources in determining our moral intuitions: Are we all liberals at heart? *Journal of Experimental Social Psychology*, 47, 1007–1012.
- Young, L., Chakroff, A., Dungan, J., Koster-Hale, J., & Saxe, R. (in prep). Theory of mind for evaluating assault not incest: Selective neural encoding of acts as intentional versus accidental.

- Young, L., & Dungan, J. (2012). Where in the brain is morality? Everywhere and maybe nowhere. *Social Neuroscience*, 7(1), 1–10.
- Young, L., & Saxe, R. (2011). When ignorance is no excuse: Different roles for intent across moral domains. *Cognition*, 120(2), 202–214. doi:S0010-0277(11)00110-7[pii] 10.1016/j.cognition.2011.04.005
- Zhong, C. B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313(5792), 1451–1452. doi:313/5792/1451[pii] 10.1126/science.1130726

FURTHER READING

- Amit, E., & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science*, 23(8), 861–868.
- Cushman, F., Murray, D., Gordon-McKeon, S., Wharton, S., & Greene, J. D. (2012). Judgment before principle: Engagement of the frontoparietal control network in condemning harms of omission. *Social Cognitive and Affective Neuroscience*, 7(8), 888–895.
- Janoff-Bulman, R., & Carnes, N. C. (2013). Surveying the moral landscape: Moral motives and group-based moralities. *Personality and Social Psychology Review*, 17(3), 219–236.
- Shaw, A., DeScioli, P., & Olson, K. R. (2012). Fairness versus favoritism in children. *Evolution and Human Behavior*, 33, 736–745.
- Young, L., & Tsoi, L. (2013). When mental states matter, when they don't, and what that means for morality. *Social and Personality Psychology Compass*, 7(8), 585–604. doi:10.1111/spc3.12044

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